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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,040	12/27/2004	John W. Bogdan		8307

7590  
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EXAMINER
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JOHNSON, RYAN

ART UNIT	PAPER NUMBER
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2817

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04/09/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/520,040	<b>Applicant(s)</b> BOGDAN, JOHN W.	
	<b>Examiner</b> Ryan J. Johnson	<b>Art Unit</b> 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 68-83 and 87 is/are pending in the application.
- 4a) Of the above claim(s) 84-86 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 68-83 and 87 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This action is responsive to the response to a restriction requirement received January 14<sup>th</sup>, 2008. Claims 68-83 and 87 have been elected. Claims 84-86 have been withdrawn from consideration. Claims 1-67 have been cancelled in the preliminary amendment received November 26<sup>th</sup>, 2007.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The listing of references in the Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the Search Report have not been considered. Applicant is advised that the date of submission of any item of information

or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

### ***Drawings***

3. The drawings are objected to because while details of the system are shown in Figs.1 – 4B, a broader figure illustrating how each individual system interfaces with the broader circuit is absent. A figure that shows an overview of the entire system and how each subsystem interacts with one another is required in order to facilitate a better understanding of the invention to one of ordinary skill in the art. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and

informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. The disclosure is objected to because of the following informalities: a section listing and briefly describing each drawing is absent.

Appropriate correction is required.

Wherein a section listed below is not applicable, a heading for the section should be omitted.

### **Content of Specification**

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

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- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
- (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
  - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the

field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

### ***Claim Objections***

5. Claims 70 and 78 are objected to because of the following informalities: In the unmarked copy of the claims, claims 70 and 78 contain an annotation referring to a previous set of claims (see line 6 of claim 70: "detecting phases of rising and falling edges of the resulting filtered signal [cl.66] derived ..." and line 2 of claim 78).

Appropriate correction is required.

6. Claim 83 is objected to because of the following informalities: "the PCU" recited in line 2 of claim 83 lacks antecedent basis. For the purpose of applying art, "the PCU" will be interpreted as "a PCU". Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 68-83 and 87 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. While heavy detail is paid to the individual sub-circuits of the invention (seen in Fig.1-4B), the specification, including the figures, fails to adequately disclose how each sub-circuit is coupled to one another and how each sub-circuit interfaces with the greater system as a whole. While one of ordinary skill in the art would be able to assemble each subsystem individually, disclosure on how to assemble the greater system as a whole without undue experimentation is lacking. See also the objection to the drawings above. Therefore, the specification does not contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains to have assembled the disclosed individual sub-systems to interface with one another in order to obtain a complete working system.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.



10. Claims 69 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 69 recites, "...shift in time by corresponding consecutive periods of said sampling clock and have 2 or more times lower frequencies, in order to...". It is unclear from the language of the claim what frequency the parallel processing clock has "2 or more times lower frequencies" of.

11. Claim 87 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the parallel processing elements. Claim 87 recites, "...used for driving said clock selectors selecting parallel processing phases during which positive sub-clocks are enabled". However, these parallel processing structures are not present within the claim and it is unclear how the clock edges interface with such a parallel processing element. For the purpose of applying art, limitations involving the unclaimed parallel processing element will not be considered.

### ***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 68-69, 72-77 and 82-83 are rejected under 35 U.S.C. 102(e) as being anticipated by Reuveni (U.S. Patent No. 6,987,817).

14. Claims 68, 69, 72-74, 76-78 and 80 recite "OR" terminology. The use of such terminology renders limitations within the claims optional. For example:

Claim 73 recites: "said waveform processing uses multiple sequential processing stages or multiple parallel processing phases". Due to the use of "or" terminology, any prior art that discloses a system that possesses only a sequential processing stage and no parallel processing stage, or any subsequent parallel processing structure, falls within the scope of the claim.

Claim 76 recites: "said sequential processing stages use selectors or arithmometers or output registers". Any prior art that discloses a system that possesses only a selector, arithmometer, or output register falls within the scope of the claim.

15. Regarding claim 68 and 72, Reuveni discloses a method of digital signal processing of multi-sampled phase (see Figs.1-11) for recovering data from a received signal waveform (DIN), captured with a sampling clock (PLL\_PHASES), by processing length of inter-transition intervals of the captured waveform (Reuveni discloses calculating symbol width; see col.5,31 - col.6,10), the method comprising the steps of:

capturing multiple samples (via 132) of the received signal during every symbol time by the sampling clock (PLL\_PHASES; see col.4,15-40);

detecting transition times of the received waveform and measuring the length (i.e. symbol width) occurring between the transition times (circuit 170 is configured to

determine symbol width, thus the transition times between waveforms; see col.5,31-col.6,10); and

calculating a number of data bits received during the inter-transition interval by evaluating the lengths of the inter-transitional interval (packed output data circuit 174 calculates and outputs the number of data bits per symbol time; see col.17,7-26).

16. Regarding claim 69, Reuveni discloses sequential processing stages (290, 292, and 294 of Fig.10) driven by the sampling clock (col.18,36-39), where each result is used by a following sequential processing stage (the output of 290 is coupled to 292, which is coupled to 294).

17. Due to the recitation of "OR" terminology, limitations regarding parallel processing phases are considered optional and are not addressed.

18. Regarding claims 73-75, Reuveni discloses a method of synchronous sequential processing (see Figs.1,6, and 11) for sampling and capturing (via sampler 132) and processing of a waveform (DIN), wherein said waveform sampling and capturing use a sampling clock (PLL\_PHASES) and said waveform processing uses multiple sequential processing stages (290, 292 and 294 of Fig.10 and 300, 302 and 304 of Fig.11), wherein the SSP method comprises the steps of:

driving said sequential processing stages with clocks synchronous to the sampling clock (see col.18,36-39), and performing a cumulative processing operation split into a series of consecutive basic operations (174 determines the amount of bits in the length of a symbol; see col.17,7-45) implementing subtraction (bit subtraction; see col.17,46-58) wherein the result of the basic operation is used to process the result of

another basic operation performed later (the determination of bits per symbol), wherein the use of sequential operation enables continuous processing of an indefinite waveform interval carrying high frequency pulses (the clock recovery circuit, including the processing sections seen in Figs.10 and 11 continuously process the input waveform DIN according to the clock output from the PLL, PLL\_PHASES).

19. Due to the recitation of "OR" terminology, limitations regarding parallel processing phases, present in claims 73-75, are considered optional and are not addressed.

20. Regarding claim 76, Reuveni discloses that the sequential processing stages use output registers (294, 304).

21. Regarding claim 77, Reuveni discloses the use of multiple parallel processing stages (174 and 176 are parallel processing stages), wherein the multiple parallel processing stages (174,176), performing different logical or arithmetical operations (each stage provides bit addition and subtraction; see col.17,46-58 and col.18,28-35), driven by the same clock which is applied simultaneously to all the parallel stages (see col.18,36-47).

22. Regarding claim 82, Reuveni discloses measuring the width of the incoming symbols (col.5,31-col.6,10) by using the inherent phase skew error in order to correct the width of the symbol (via 228).

23. Regarding claim 83, the symbol width correction logic continuously reads next sets of symbol widths and corrects the symbol widths synchronously according to the sampling clock (PLL\_PHASES; see col.6,18-32, col.7,14-22, col.8,4-15, col.5,61-63).

24. Claim 87 is rejected under 35 U.S.C. 102(e) as being anticipated by Arcus (U.S. Patent No. 6,426,662). Arcus discloses a clock selection system for enabling sub-clocks (Fig.2), generated at the outputs of serially connected gates (14A – 14D) which a sampling clock is propagated through, during particular phases corresponding to cycles of the sampling clock (each node between the delay gates corresponds to a different delay and phase in the propagating waveform; see Fig.3A), wherein clock selectors connected serially (FF 20-27) are used for enabling the sub-clocks; and falling or rising edges of the sub-clocks are used for driving the clock selectors (abstract; col.2,48-60).

***Claim Rejections - 35 USC § 103***

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

26. Claims 70 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reuveni in view of Abel (U.S. Patent No. 6,937,678). Reuveni discloses the limitations discussed above regarding claims 68 and 72. Reuveni also discloses limitations recited in claim 71 including defining edge skew during sampling and measuring the symbol length of a sampled signal (see col.5,31-col.6,10). Reuveni, however, does not explicitly disclose the use of digital filters to filter out noise from the captured signals. The Examiner notes that digital filters designed to filter noise are well known in the art. Abel discloses such a digital filter (Fig.3) designed to filter sampled

signals (see col.1,6-10) in order to attenuate noise (see col.1,9-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have filtered the sampled signals of Reuveni with a digital filter in a well known manner, such as the manner disclosed by Abel, in order to have provided the benefits of noise attenuation.

### ***Conclusion***

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yoshizaki (U.S. Patent No. 6,868,134), Enam et al. (U.S. Publication No. 2002/0141515) and Masui et al. (U.S. Publication No. 2005/0135527) disclose similar clock/data recovery circuits.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan J. Johnson whose telephone number is (571)270-1264. The examiner can normally be reached on Monday - Thursday, 9:00 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RJJ/

/Robert Pascal/  
Supervisory Patent Examiner, Art Unit 2817